

Strategy Research Project

Does the Defense Industrial Base Environment Create Strategic Risk?

by

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United States Army War College
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USAWC STRATEGY RESEARCH PROJECT

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Abstract

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The Defense Industrial Base (DIB) is a heterogeneous collection of organizations that provides equipment and materiel for the Department of Defense (DoD) in support of National defense strategy. The complex defense industrial base environment, coupled with current budget uncertainties, creates strategic risk for the United States. Sectors at risk include the missile and munitions sector, and the tracked combat vehicle sector. To mitigate this risk, DoD must ensure that only strategy-based requirements are placed on the defense industrial base; they must improve and maintain better communication with industry; promote legal reforms to the procurement process; and dedicate funding to maintain critical irreplaceable sectors of the industrial base.

Does the Defense Industrial Base Environment Create Strategic Risk?

However, the advantages that have enabled American preeminence in defense technology are not a birthright, and the key elements of that base that are necessary to ensure U.S. dominance on future battlefields must be sustained and nurtured.

—2012 Annual Industrial Capabilities Report to Congress¹

In his 1961 farewell address to the Nation, President Dwight D. Eisenhower warned of the dangers of the military industrial complex. Today, when one thinks of the defense industrial base (DIB), it is still often thought of as a large, monolithic conglomeration of businesses that provide arms and materiel to the Department of Defense (DoD). If this were indeed true in the past, it is no longer true today.² A collaborative report generated by the Department of Homeland Security (DHS) and DoD defines the DIB:

The DIB is DoD, the U.S. Government, and the private sector worldwide industrial complex with capabilities to perform research and development (R&D), design, produce, deliver, and maintain military weapon systems, subsystems, components, or parts to meet military requirements. The DIB includes hundreds of thousands of domestic and foreign entities and their subcontractors performing work for DoD and other Federal departments and agencies. Defense-related products and services provided by the DIB equip, inform, mobilize, deploy, and sustain forces conducting military operations worldwide.³

As this definition demonstrates, the DIB is not a large monolithic entity but rather a collection of heterogeneous entities and thinking of it as a monolithic entity is “not analytically useful.”⁴

Just as the Nation is struggling with debt, increasing non-discretionary spending outlays and decreasing tax revenues, DoD has an interrelated struggle with maintaining a defense industrial base that supports future procurement. As DoD plans for the future, several critical questions arise. Will the future of diminished budgets and associated

decreases in defense spending create an environment in which the DIB is incapable of providing material and services when required, and does this situation create a strategic security risk? If the Nation is being put under a strategic risk due to diminishment of the DIB, what are ways to mitigate this risk to the Nation?

The complex defense industrial base environment, coupled with budget uncertainties, creates strategic risk for the United States. Sectors at risk include the missile and munitions sector, and the tracked combat vehicle sector. To mitigate this risk, DoD must ensure that only strategy-based requirements are placed on the DIB; they must improve and maintain better communication with industry; promote legal reforms to the procurement process; and dedicate funding to maintain critical, irreplaceable sectors of the industrial base.

The Economic Environment Impacting the Department of Defense

The critical issue facing the DIB is DoD's imperative to reduce spending and outlays in light of worsening economic conditions in the United States. According to Jacques S. Gansler, a noted expert in defense acquisition and policy, the United States will be unable to increase its GDP fast enough to meet future defense spending needs as well as mandatory and other discretionary spending.⁵ President Obama addresses the economic situation in his opening paragraph to the introduction of the 2012 Defense Strategic Guidance, "At the same time, we must put our fiscal house in order here at home and renew our long-term economic strength. To that end, the Budget Control Act of 2011 mandates reductions in federal spending, including defense spending."⁶

There are several key elements to the 2011 Budget Control Act (BCA). First, the 2011 BCA mandates \$1 trillion spending caps on discretionary programs from 2012 thru 2021.⁷ Secondly, the BCA established a committee to reduce the deficit by \$1.2 trillion.⁸

Failure of this committee to reach an agreement results in a process known as sequestration.⁹ The sequestration process mandates across the board cuts to defense and non-defense related spending.¹⁰ If sequestration were to go in effect, the result would be an 8.8% uniform spending cut for all defense related spending with some exceptions for military personnel.¹¹ While the implementation of sequestration is not a certainty, the potential of across the board spending cuts only reinforces the environment of uncertainty.

The pressure applied to reduce DoD budgets has a direct impact on procurement and these reductions in procurement will impact the DIB. Between the FY 2012 and FY 2013 Future Years Defense Program (FYDP), there is an overall spending decrease of 7%, and even more critical for the DIB, is the 14% decrease in funding for defense procurement.¹² Figure 1 compares the FY 2012 FYDP and the FY 2013 FYDP, as well as the associated decrease in spending on procurement thru FY 2017.

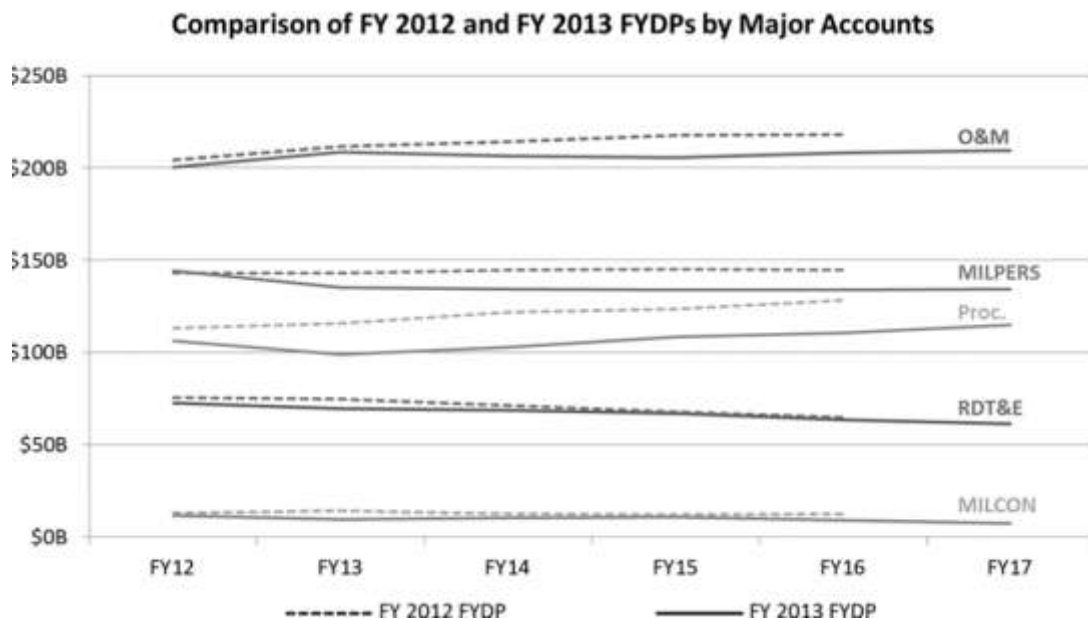


Figure 1. Comparison of FY 2012 and FY 2013 FYDPs by Major Accounts¹³

Although the sequestration process and across the board spending cuts are still not enacted, the environment of uncertainty is already having effects. For example, the ammunition allowance in the 2013 National Defense Authorization Act (NDAA) is \$108 million less than requested and is \$250 million less than the previous year's authorization.¹⁴ Additionally, to prepare for any future impacts of sequestration, the Army directed its installations to reduce their FY 2013 base operations budgets by 30 percent from FY 2012 levels, which further demonstrates the environment of uncertainty that the looming sequester creates.¹⁵

Condition of the Defense Industrial Base

The 2010 Quadrennial Defense Review (QDR) acknowledges that DoD has historically taken a "hands off" approach to managing the defense industrial base.¹⁶ Furthermore, the QDR states that DoD must develop a strategy "for shaping the structure and capabilities of the defense industrial base."¹⁷ Although the QDR gives guidance for managing the DIB, it does not provide specificity as to how this will be accomplished. The FY 2013 budget request acknowledges the requirement for a strong industrial base, however it only provides limited specificity on how to strengthen the DIB.¹⁸

Historical Background of the DIB

The current state of the DIB is not the result of the current budget conditions, but rather it is the result of years of declining defense spending, associated decreases in procurement of major weapons systems, and the hands off approach that was taken in managing the DIB. The post-cold war decrease in defense budgets and procurements were the largest decrease since World War II.¹⁹ Between 1985 and 1995 tank procurement went from 720 systems to 0 systems in 1995.²⁰ Furthermore, during this

same period, defense contractors underwent a significant merger process with the number of major defense contractors dropping from over 50 to 6.²¹ Instead of a defense industrial complex composed of numerous suppliers, the situation that exists today is a monopsony (buyer's monopoly) with the small number of major weapon system suppliers being a virtual monopoly.²² As an example, prior to the end of the Cold War, DoD could look to three manufacturers of tracked combat vehicles, there are now only two.²³

Legislation and Regulations Impacting the DIB

Some longstanding issues that have continued to challenge both DoD and the DIB are the myriad of regulations and export control laws as well as the legal requirements associated with "buying American." For the "buying American" challenge, there are three significant legislative requirements associated with DoD procurement: the Buy American Act (BAA), the Berry Amendment (BA) and the requirements established in the FY 2007 National Defense Authorization Act (NDAA).

The BAA has the largest impact on the DIB because it mandates that an item must be manufactured in the United States, or the cost of domestic components must exceed 50% of the total cost of all components.²⁴ While these requirements may be waived, it presents another challenge that both DoD and the defense industry must struggle with to either procure or produce weapons and weapons systems.

According to the United States Code, the BA "requires Department of Defense (DoD) to give preference to domestically grown, reprocessed, reused, or produced items related to food, textiles (clothing, threads, fabrics) and hand or measuring tools on procurements over the Simplified Acquisition Threshold (SAT)."²⁵ While the BA presents

a broad challenge for DoD for all procurements; it is not as significant of a factor for major weapons systems procurement because it primarily relates to textiles and tools.²⁶

The FY 2007 NDAA is significant to the procurement and acquisition of major weapons systems because it prohibits acquisition “of end items, or components thereof, containing a specialty metal not melted or produced in the United States: aircraft, missile and space systems, ships, tank and automotive items, weapon systems, or ammunition.”²⁷ While there are exceptions to the requirements, the NDAA is yet another requirement that limits the sources of production and procurement for DoD.

The export control system and its’ inherent limitations are an additional factor that impacts the DIB. As outlined in the 2010 QDR, the current system is outdated and because of the technological advances that international partners have made, does not allow DoD to take advantage of their advances and prevents producers in other nations from seeking U.S suppliers as partners.²⁸ An example of how this process has failed to work took place in 2003 when Boeing included a small export controlled computer chip (an item with dual military and commercial application) on a commercial airline sold to China, and subsequently received a fine of \$15 million for violating export controls.²⁹ This situation demonstrates a dilemma for potential DoD suppliers. If a supplier produces a commercial item that is used in a weapons system, then this item falls under more stringent export control laws, which frequently discourage producers from going into the DoD market.³⁰

The complexity and ever increasing quantity of regulations associated with weapons system procurements creates additional challenges to both DoD and the DIB. As a result of several highly publicized corruption scandals impacting DoD

procurements in the post 9/11 era, Congress enacted numerous restrictions that complicated the defense acquisition process and “discouraged risk taking by defense procurement officials.”³¹ An example of the risk taking that would be discouraged by defense procurement officials is using practices found in commercial industry to rapidly procure items for DoD.³²

National Defense Strategy and the DIB

The U.S. national defense strategy must drive what DoD requires of the DIB. The current DoD strategic guidance mentions the DIB and asserts that “the Department will make every effort to maintain an adequate industrial base and our investment in science and technology.”³³ While this broad statement provides a starting point to the development of a strategy for the DIB, it is insufficient in providing sufficient direction to both DoD and the DIB on how to further maintain and develop critical capabilities for the Nation.

An example of where DIB requirements were not determined by strategy is the language that Congress included in the 2013 National Defense Authorization Act (NDAA) that concerns the production of the M1 Abrams Main Battle Tank (MBT), Bradley Fighting Vehicle (BFV) and Hercules recovery vehicle. The 2013 NDAA “requires minimum sustained production of the Abrams tank, Bradley fighting vehicle and the Hercules recovery vehicle.”³⁴ This instance highlights how Congress is mandating the production of M1 and BFV to maintain these sectors of the DIB, however this method is not linked to the Army’s strategic requirements.

Other Factors Impacting the DIB

A critical issue in the acquisition process is a perceived lack of trust between industry and DoD and the direct economic impact that this has on DoD and the DIB.

The DIB participants perceive that DoD is micromanaging their activities, which is exemplified by the quantity of reports they are required to submit.³⁵ In a House Armed Services Congressional Committee hearing, a member of the DIB said in his testimony, there is a dysfunctional and adversarial relationship between business and industry which is a result of a lack of trust.³⁶ This absence of trust has a clear cost to the members of the DIB and these costs are passed on to DoD. For example, in 2012, of the over \$400 billion spent on goods and services for DoD, it is estimated that over \$100 billion was spent on complying with administrative requirements.³⁷

Associated with the lack of trust that impacts DoD and the DIB is a perceived lack of transparency and communication between the two entities. As noted in the *Findings of the Panel on Business Challenges in the Defense Industry*, “the lack of a clear strategic direction emanating from DOD has led to poorly aligned capital investment by industry.”³⁸ The impact that this has on industry is that they have no clear direction on where to invest their limited research and development resources.³⁹

An ever increasing small number of major weapon system suppliers in the DIB operate in a legally complex environment, beset by a myriad of laws and regulations. While there are clear benefits to some of these statutory and regulatory requirements, they often stifle communication and create a lack of trust between the DIB and DoD.

Impacts of Uncertainty

The complex DIB environment coupled with diminishing budgets, and associated decreases in defense procurements creates an environment of uncertainty for all members of the DIB. If DoD procurement is uncertain, DIB members may be unwilling to invest in designing future weapon systems and may even leave the DIB. In this uncertain era, DoD will be challenged to make large procurements, which potentially

could cause a loss of human capital in the DIB. The DIB faces a loss of expertise required to design critical defense systems and, it may also lose the technical expertise required to manufacture these systems, as displaced workers leave the defense industry. Furthermore, if manufacturing and production facilities are no longer needed, they may be closed or sold. With no operational production facilities, a risk is presented to DoD in that there will be an additional lead time to either bring existing facilities into an operational status, or build new facilities.

At Risk Sectors

As stated, the DIB is not a monolithic block, but rather it consists of multiple sectors, each with their own unique challenges. While some sectors, such as the information technology and contract services sectors, have direct application in the commercial market and are therefore less vulnerable, there are several sectors that are unique to DoD. The missile munitions sector and the tracked combat vehicle sectors almost solely support DoD and fulfill unique military requirements. Examining these sectors demonstrates how the current DIB environment creates strategic risks, as well as highlights the unique challenges the sectors face.

Missile and Conventional Munitions Sector

The missile and munitions sector has almost purely military application, and with some minor exceptions for commercial ammunition and explosives, the primary purchaser is DoD.⁴⁰ The missile and munitions sector presents numerous challenges for the DIB and DOD. One of the first historical challenges is that when DoD budgets shrink and procurements drop off, the historical precedent is that munitions procurements are often the first to decrease, and at a significant rate.⁴¹ For example between 1984 and 1995, munitions procurement decreased by nearly 80% and during that same time

period, over 75% of the companies that were part of the munitions industrial base left the industry.⁴²

The small size and quantity of munitions and missile suppliers in the DIB creates challenges for DoD. Limited suppliers lessen competition for DoD contracts which results in either higher prices for the DoD or, in some cases, the base of contractors available to produce these systems becomes non-existent. The *2012 Annual Industrial Capabilities Report to Congress* highlights the problem when it states, “two prime contractors account for approximately 85 percent of the Department’s munitions and missile procurement funding.”⁴³ Furthermore, the report highlights that even though there is some competition at the sub-tiers, the suppliers that provide materiel to the sub-tiers provide to both prime contractors, thereby limiting lower tier competition.⁴⁴

Missile Sub Sector

A condition that presents challenges to maintaining the quantity of prime and sub-contractors is that only one new major missile system is in development, the Joint Air-to-Ground Missile (JAGM).⁴⁵ The next newest systems used by DoD are the Trident D-5, which was developed in the 1980s, followed by the Minuteman II, which was developed in the 1960s.⁴⁶ This lack of having new systems in development can result in contractors leaving the DIB due to lack of funding for design or lack of production for existing systems.

The result of the lack of development of new missile systems, small numbers of prime contractors and even smaller number of sub-tier suppliers is that there is a significant risk that the U.S. will not have the industrial base available to meet future requirements in the event of a conflict.⁴⁷ Furthermore, in addition to the limited industrial base in which to produce missiles, potentially the United States is at risk of losing the

intellectual capacity to develop and design missile systems. As noted in the 2012 Industrial Capabilities Report to Congress, the lack of new missile development limits the ability of the sector to meet both current and future demands as well as attracting and retaining a qualified workforce.⁴⁸

This idea of missile shortages is not just evident in the report submitted to Congress on the state of the industrial base, but it is also acknowledged within the industry. As early as 2001, Mr. Richard Palaschak, a noted expert in the munitions industry, stated “The problem with precision-guided munitions is not the health of the industry, but the fact that they can’t produce them fast enough to replenish the inventories after a conflict.”⁴⁹

The conditions present within the missile sector of the DIB create several strategic risks for the United States. The most critical risk presented is that strategic, operational and tactical options may be limited by the quantities of missiles that are available to be used in the event of a conflict. Additionally, if the U.S. is engaged in a protracted conflict that requires the use of a large quantity of these missile systems, the Nation may not have sufficient stocks on hand to prosecute the conflict. Finally, if the missile sector is allowed to deteriorate to a point where no new missile systems are in design, there may not be the intellectual capacity in the United States to design, test and produce these critical missile systems.

Conventional Munitions Sub Sector

In some aspects, the conventional munitions sector is different from the missile sector in that there is commercial application for munitions such as those used by hunters and other sportsman. In this case, DoD is not solely reliant upon the DIB for

supply of conventional munitions. Even with this alternate source of munitions, the potential strategic risk remains for the U.S.

While the conventional munitions sector, and more specifically, the small arms ammunition sector has commercial application, over 99% of the DoD's small arms ammunition (5.56mm, 7.62mm and .50 caliber) is produced by the Lake City Army Ammunition Plant (LCAAP).⁵⁰ While having essentially a single source of DoD organic production presents risk, this situation can be overcome by using commercial ammunition manufacturers for small arms ammunition requirements. The most significant risk in this sector is in the compounds that are used to make these munitions, primarily the ingredients used to produce the propellants and primers.

Critical to production of the propellant is the manufacturing of nitrocellulose. Nitrocellulose is produced by combining cellulose with nitric and sulfuric acids.⁵¹ There is only one plant, the Radford Army Ammunition Plant (RAAP) where these components are combined to produce nitrocellulose.⁵² Not only is nitrocellulose critical to the production of small arms propellant but, it is used in every propellant and explosive used by DoD.⁵³

Another critical vulnerability in the production of small arms munitions for DoD is the acquisition of the substances used in the production of small arms primers.⁵⁴ All 13 chemicals required for the primers are formulated from U.S. sources, however; seven of the sub chemical components have sources that are solely outside of the U.S. to include Brazil, China and Mexico.⁵⁵ A 2010 article in *Army Sustainment* concerning small arms production states that "Any disruption of supply, whether induced by economics, politics, or physical dislocations, would have a significant adverse effect on

the ability of Lake City to produce small-arms ammunition” as there are no current alternatives to the compounds currently in use.⁵⁶

For material and substances that are considered critical to DoD requirements, the Defense Logistics Agency (DLA) operates a strategic materials program known as the National Defense Stockpile (NDS).⁵⁷ Despite the criticality of these materials required for production of small arms primers, none of the seven critical foreign sourced compounds are maintained in the NDS.⁵⁸

The strategic risks presented in the conventional munitions sector are both structural and material related. The structural risks are that there is only one facility for producing nitrocellulose in the United States. The loss, degradation or production requirements that exceed capacity at the RAAP would result in a lack of nitrocellulose required for the production of propellant and other explosives. The material risks are presented by having only foreign sources for seven of the critical compounds required for production of small arms primers.

Tracked Combat Vehicle Sector

The current state of the tracked combat vehicle sector is uncertain. There are a limited number of manufacturers that produce these tracked combat systems and the loss of one of the manufacturers would have significant implications for DoD by having less competition present. Less competition for DoD would inherently result in higher prices, less opportunity for innovation and may result in not getting the best product for the Warfighter. A higher price in an era of declining budgets would result in procuring less systems or not modernizing existing systems, and therefore would have a negative impact on the operational aspects of warfighting. The product could essentially be too expensive to purchase in an era of declining budgets. If DoD fails to purchase and

procure equipment, then the industry can no longer survive under their current business model.

The tracked combat vehicle sector shares some of the same challenges with the missile munitions sector but, also has some uniquely inherent challenges. The 2012 Land Combat Systems report defines combat vehicles as “CVs are military unique, built specifically for defense with little or no commercial or civil applications. Heavy tracked or wheeled CVs have extensive armor protection, large weapon systems and are often used in support roles by both the Army and Marine Corps”.⁵⁹

In general, the vehicle sector which supports DoD Services is a large sector that shares many characteristics with those used by industry. For example, the M915A5 series of trucks used by the U.S. Army are essentially commercial Western Star trucks found in the commercial trucking industry throughout the United States.⁶⁰ Because of the inherent commercial nature of these vehicles the DoD has multiple sources in which to procure these systems. In this case, there is no monopsony where DoD is the sole procurer of these systems. If DoD fails to procure additional commercial trucks, this does not equate to losing critical suppliers in the industrial base; there are other commercial suppliers who would fulfil DoD’s requirement.

The primary difference for the tracked combat vehicle is that there is a duopoly of suppliers: British Aerospace (BAE) and General Dynamics Land Systems (GDLS).⁶¹ Even with only two primary suppliers for tracked combat vehicles, there is concern that with no additional opportunities to design and manufacture combat vehicles, some of these long existing contractors may drop out of the production business.⁶²

Also differentiating the wheeled vehicle sub sector and the tracked combat vehicle sub sector is the design and manufacturing processes. The requirements for engines and transmissions to support the speed and mobility requirements for off-road maneuverability as well as the constraints presented by space and weight limitations are significantly different than the demands presented by commercial vehicles and applications.⁶³

The *Land Combat Systems, 2011* report states, that there are only two facilities in the United States with the capability of producing heavy combat vehicles; the Joint Systems Manufacturing Center (JSMC) located in Lima, Ohio and the BAE facility located in York, Pennsylvania.⁶⁴ If these facilities were shut down for an extended period, it would be “a monumental task” to start production again.⁶⁵ Closing these facilities would result in the U.S. not having any standing tracked vehicle production facility and if there were an un-forecasted requirement, the production facilities would have to be created.

Besides the physical challenges presented by restarting production at an existing facility or, building a new facility to produce tracked combat vehicles, this sector shares a similar challenge with other sectors in maintaining a workforce with the highly specialized skills required to produce these systems. According to the *Land Combat Systems 2010* report, welders are critical to producing hulls⁶⁶ of tracked combat vehicles and getting a skilled welder is “only the starting point for training someone in ballistic welding” as it takes additional years and further certification to train a welder in ballistic welding.⁶⁷ Furthermore, the report states that when the workforce shrinks, the senior

welders who are going to retire within the next decade remain while the younger ones leave the industry and are not likely to return.⁶⁸

While the production of tracked vehicle hulls has its own unique challenges, there are additional challenges presented by the sub-components that make up the drivetrain of the tracked combat vehicles. The two major components of a tracked vehicle drivetrain are the engine and transmission. While in some cases there are commercial applications and sources for the engines used in combat vehicles; this is not the case when it comes to the transmissions used in tracked vehicles.

The tracked combat vehicle transmission production is another unique aspect of the DIB. The production of these transmissions is a small niche application sector with a limited supplier base that has no commercial application. There is one primary manufacturer of transmissions for tracked combat vehicles, Allison Transmission, which holds over 90% of the domestic market and 80% of the international market.⁶⁹ These transmissions are produced at the Allison Transmission plant in Indianapolis, Indiana. The Allison Transmission plant is similar in operation to JSMC, but in this case, the facility is owned by Allison Transmission but the equipment is government owned.⁷⁰

The challenge with this sub-component of the tracked vehicle sector is maintaining the industrial base; in this case maintaining the viability and capability of Allison Transmission. According to a 2009 briefing compiled by the Office of the Secretary of Defense, the challenges presented are maintaining a research and development capability as well as maintaining a workload at Allison.⁷¹

Problem Statement

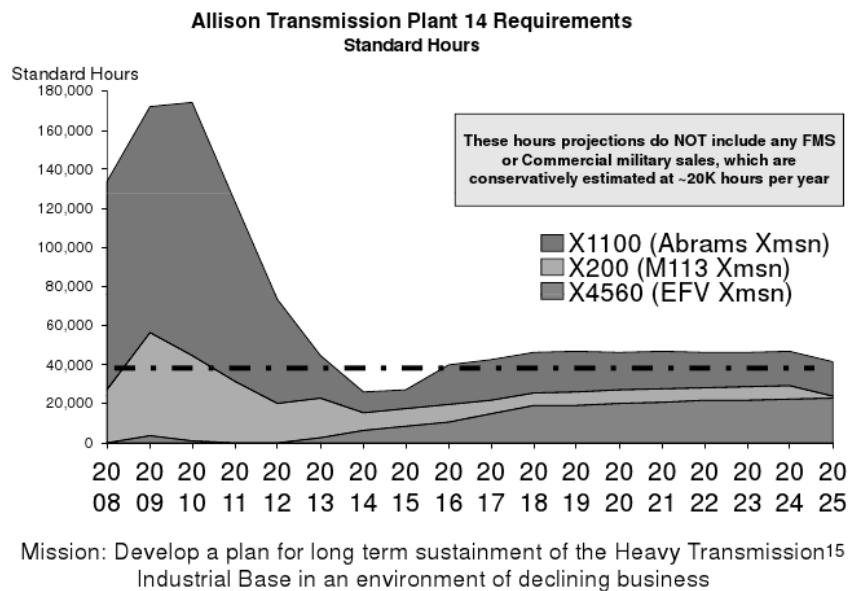


Figure 2. Allison Transmission projected workload⁷²

The information presented in Figure 2 shows that the current projected workload for Allison is just enough to maintain a workforce. Any loss or decrease in production could have significant effects on the viability of the workforce. If the workload is not there, Allison transmission may leave this sector of the DIB, creating a critical vulnerability in the tracked combat vehicle sector.

Risk is presented in the circumstance that DoD requires an immediate and large quantity of tracked combat vehicles. In this situation, the facilities to build these systems may no longer exist or, in the case of the JSMC, DoD may own the facilities but, not have the intellectual capacity to design or manufacture systems. Lastly, DoD could be faced with the situation where it lacks critical sub-components such as the transmissions, required to build a complete system.⁷³ An industrial base could be

formed but, it takes significant time to build a new manufacturing capability.

Furthermore, depending on the severity of the crisis, this delay between requirements and the capability to produce systems would have strategic effects on the U.S. national security policy and the execution of that policy.

Recommendations to Mitigate Risk

Because the DIB is a complex set of industries that are in no way monolithic or homogenous; what works for one sector of the DIB, may not work in another. There are however, several broad initiatives that should be applied across the sectors to reduce risk. These initiatives include ensuring that strategy determines requirements, funding critical sectors of the DIB to maintain capability, expanding and maintaining better communications and trust with industry and making legal reforms to the procurement process.

Strategy Determines Requirements

The U.S. National Defense Strategy must drive what DoD requires of the DIB, what the DIB provides to DoD and most importantly, this strategy must provide direction to the DIB on critical capabilities that must be preserved to support national defense. The broad guidance found in the DoD strategic guidance is not sufficient. This guidance must be followed up with a clearly articulated and specific strategy that defines critical capabilities, allocates resources to maintaining DIB capabilities and ultimately guarantees that the U.S. maintains technological superiority.

A specific strategy as called for in the QDR must be developed and implemented to sustain the DIB.⁷⁴ Although there have been some efforts implemented such as the Sector-by-Sector, Tier-by-Tier (S2T2) assessment, these efforts need to go further by

providing a specific DIB strategy to those sectors that are critical to the National defense, along with strategies to maintain the capability of these sectors.

Fund Critical Sectors of the DIB

If strategic guidance demonstrates that certain sectors of the DIB are critical to maintaining national security, then these sectors must be preserved. There are three methods to preserving critical sectors; conduct additional procurements, fund sectors without procuring additional items or bring in certain elements of these sectors into the organic DoD industrial base.⁷⁵ These three methods allow for tailoring a solution based upon resources available.

An example of maintaining the sector with additional procurements without corresponding strategic requirements is the Congressional mandate to continue production of the M1 Abrams, the BFV and the Hercules recovery vehicle.⁷⁶ The challenges this action presents is the Army will have to maintain these systems without a requirement, it is costlier than maintaining a warm base, DoD will eventually have to dispose of these excess systems, and money will be spent on unnecessary equipment instead of spending on what is necessary. To resolve this situation, the Army should provide Congress ways to preserve the production capability without the cost of producing entire systems and the associated burden of maintaining and disposing of excess systems.

DoD must fund critical at risk sectors to ensure that a warm base capability is available for emergency requirements. At risk sectors should receive funding to maintain a production, design and testing capability so that in the event of an un-forecasted requirement, there is a production capability for DoD. The challenge that will be faced is justifying the expenditure of funds in a time of decreasing resources without

receiving any products from the manufacturer. To mitigate this challenge, DoD should consider using the DIB as part of its depot maintenance plan and use the facility and workforce to maintain current systems. Even without receiving additional systems, this method would be less expensive than producing combat systems that are not required.

Finally, DoD should bring critical elements into the DoD organic industrial base. Because of the high cost, this should be the exception and only for sectors highlighted in the strategic review. By bringing in certain elements of the industrial base, DoD will have a guaranteed source of design and production.

Maintain Better Communication and Trust with Industry

Given the complex environment between DoD and the DIB, DoD must take measures to overcome the perceived lack of trust. Keys to maintaining a relationship between DoD and the DIB are opening up the lines of communication as well as building a relationship based on trust. Expanding and maintaining better communication between industry and DoD will allow DoD to better communicate those critical strategic requirements and will allow industry to understand what is required of them to meet future DoD requirements. If an industry is struggling financially, money wasted on designing capabilities that DoD does not require not only has an immediate financial impact but, may cause the industry to re-evaluate doing business with DoD. According to Scott Littlefield, a program manager with the Defense Advanced Research Project Agency (DARPA), "If DoD expects industry to meet its needs, it must find better ways to provide reliable information that will allow industry to anticipate and respond to those needs."⁷⁷

Increasing the level of trust and opening the communications lines will reduce costs for both the DIB and DoD by reducing the amount of money spent complying with

regulatory requirements. Furthermore, increasing trust and communications between DoD and the DIB will allow the DIB to better target their finances towards developing what DoD actually requires, instead of developing what industry thinks DoD requires.

Legal and Regulatory Reforms

Congress should refine the requirements in the BA and BAA, by making these laws less restrictive, more focused on preserving critical manufacturing capabilities in the U.S. and easier for DoD to waive the statutory requirements for critical needs. This refinement will enable DoD to have more sources in which to procure items and ultimately get a better priced product for the taxpayer. The BA and BAA were enacted to protect domestic sources of production and ensure that defense procurements used these sources. Unfortunately, the laws have not changed as significantly as the production base in the U.S. When these laws were written, the US was a major producer of many of the items; as conditions have changed, many of these products are no longer produced in the U.S. and the challenge for the DoD is finding ways to comply with these requirements.

Congress should change the export control laws to make them less restrictive. If these laws were less restrictive, it would allow the DIB to produce items that have both a commercial and DoD application and the result for DoD is that items would be cheaper to procure because all of the developmental costs are not borne by DoD. Furthermore, changing these laws may allow for additional participants in the DIB by encouraging commercial producers to market their items to DoD without fear of these items being subject to stringent export controls. The export control laws and regulations in the U.S., while preventing the spread of sensitive technology to countries that the U.S. may have concerns about, have also had other impacts. One of the impacts is to

limit commercial sales of a product that could have dual use.⁷⁸ For example, a supplier to the DIB could develop a product for commercial use and if this item were used in a defense item, it would fall under export control.

Conclusion

The DIB is a complex, interrelated entity of government and private organizations that must be managed as a critical component in maintaining the defense and security of the Nation. In this era of declining resources and defense budgets, leaving industry on its own to sort out its problems will not be sufficient to maintain the necessary capabilities for the Nation.

To maintain the industrial base and mitigate strategic risk to the Nation, the DoD and other elements of the U.S. government must ensure that strategy determines requirements, maintain better communications and trust with industry, make legal reforms to the procurement process and fund critical sectors of the DIB to maintain capability. Failure to take an active role in managing the DIB and ensuring that requirements for the DIB are aligned with National Security Strategy will result in a DIB that is incapable of meeting the equipment needs of DoD.

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